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STATISTICAL BULLETIN
Metropolitan Life Insurance Co.

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THE BIRTHRATE AND THE DEPRESSION

The birthrate in the United States has reacted to the present prolonged period of lowered business activity by showing, in 1931, an unusual decline; and, in all probability, it will, in 1932, reach a new low point to which the observed long-time downward trend would not have brought it until 1934 or later. The decrease is much more pronounced in the industrial than in the agricultural population; although it so happens that the greatest per cent. decline is shown in a distinctly non-industrial state, namely, Arizona. European countries, which have been under even greater economic stress than the United States, have shown similar declines.

Over a period of many years past, a downward trend has been observed in the birthrate in the United States and throughout the civilized countries of the world. This trend has been due to several causes, chief among which, there can be little doubt, is the increased dissemination of knowledge of birth control and its growing practice among the masses. For the expanding Registration Area of the United States, the falling off in the birthrate from 1915 to 1931 amounts to an average of 2.0 per cent. per year. But from time to time various influences, such as war, unfavorable business conditions, or a widespread epidemic of disease, have been of sufficient force to increase the velocity of the downward trend; so that the birthrate at any particular time, as compared with any preceding year, may show an above-average decrease. This is exactly what happened in 1931 and during the first half of 1932, if we may judge from the records now available. The year 1930 did not show any effect of the change in the economic situation, for obvious reasons.

The birthrate for the United States Birth Registration Area in 1929 was 18.9 per 1,000 population, and the same figure was repeated in 1930; in 1931, it dropped to 17.8*. Whereas the observed down-

*The rates for 1930 and 1931 are provisional. The 1931 rate does not include Utah.

ward trend in the birthrate in the years 1915 to 1931 shows an average annual decrement of 0.447 per 1,000 of population, or 2.0 per cent., the 1931 rate (17.8) was 1.1 points, or 5.8 per cent., below the 1930 rate (18.9). Furthermore, data available for the first quarter of 1932 show declines as compared with the like period of 1931, as follows: Connecticut, 9.0 per cent.; New York, 7.5 per cent.; Indiana, 6.7 per cent.; Pennsylvania, 5.9 per cent.; Wisconsin, 3.6 per cent.; and Kansas, 2.5 per cent. In Maryland, there was a slight increase, *viz.*, 0.6 per cent. Judging from these few figures, the birthrate for 1932 will probably be below 17, instead of 18, the point to which it would have dropped if only the average annual decrease of 2.0 per cent. had actually occurred in 1931 and 1932.

A glance at the birthrates for the expanding Birth Registration Area for the years 1915 to 1931 (Table 1), shows that a decrease in the birthrate of 5.8 per cent., as registered in 1931, although unusual, is not without precedent. In fact, the rate recorded in 1922 was 7.9 per cent. below the 1921 rate; and that for 1919 was 9.4 per cent. below the 1918 rate. The drop in 1922, like that in 1931, followed a year in which unfavorable business conditions prevailed. In 1919, the decline of 9.4 per cent. probably reflected the cumulative effect of a number of abnormal conditions growing out of the influenza epidemic and the war. The unusual drops recorded in 1922, 1931 and 1932, on the other hand, can hardly be attributed to any factors other than unfavorable business conditions, superimposed on those influences which have caused the observed general downward trend characteristic of recent years.

TABLE 1

Birthrate per 1,000 Population for the Expanding Birth Registration Area, 1915-1931

YEAR	BIRTHRATE PER 1,000 POPULATION	PER CENT. CHANGE FROM PRECEDING YEAR	YEAR	BIRTHRATE PER 1,000 POPULATION	PER CENT. CHANGE FROM PRECEDING YEAR
1931	17.8*	—5.8	1922	22.3	—7.9
1930	18.9*	0	1921	24.2	+2.1
1929	18.9	—4.6	1920	23.7	+6.3
1928	19.8	—3.9	1919	22.3	—9.4
1927	20.6	—0.5	1918	24.6	—0.4
1926	20.7	—3.7	1917	24.7	—1.2
1925	21.5	—4.0	1916	25.0	—0.4
1924	22.4	+0.9	1915	25.1	—
1923	22.2	—4.5			

*Provisional.

Nor was the United States the only country in which the 1931 birthrate was lowered by the business depression. Available figures for other countries, with few exceptions, show similar large declines. In Europe, particularly sharp drops are shown for Hungary (8.7 per cent.), Germany (8.6 per cent.), Greece* (7.0 per cent.), Poland (6.2 per cent.), Italy (5.0 per cent.), Czechoslovakia (5.3 per cent.), and France (3.9 per cent.). Of the South American countries, figures are available for Chile alone, which records a decline from 39.8 in 1930 to 34.6 in 1931, that is, 13.1 per cent.

In the United States, the abruptness of the 1931 decrease was general throughout almost the entire Registration Area. In fact, the rate in 36 states was more than 2 per cent. lower in 1931 than in 1930; while in 1930, only four states—Florida, North Carolina, New York and New Jersey—showed a birthrate more than 2 per cent. below that of 1929. In 1930, the birthrate in 17 states was more than 2 per cent. above the 1929 rate; but, in 1931, no state showed any appreciable increase. Only Georgia showed any increase at all, namely, 1.4 per cent.

An examination of Table 2 shows that, except for the District of Columbia, those states in which the birthrate decreased very little, or actually increased in 1931, represent largely a rural or agricultural population; while within states showing more than a five per cent. decrease is found a relatively large portion of urban and industrial population. On the basis of geographic distribution, the states making up the West North Central Group showed the least drop in the birthrate in 1931; and, eliminating Delaware, West Virginia, and Mississippi, the South Atlantic, East South Central and Pacific groups, considered as a unit, had almost as good a record.

It has been shown that the present fecundity of the American population is barely adequate to maintain our numbers at a fixed level. Temporarily, we still have a good excess of births over deaths, but only because of past conditions, which have given us a relative excess of women in the child-bearing ages. But a further fall in the birthrate will presently bring us below the self-sustaining level, when the effect of past high birthrates has worn off. It is, of course, possible that when the present economic stringency passes, there will also be a recovery in our fecundity to a higher point, through an increase in the marriage rate. Failing this, it appears inevitable that, at some not very distant date, our population will not only come to a

*Applies only to cities of over 5,000 population.

TABLE 2

Birthrates per 1,000 Population in the Birth Registration Area of the United States, 1929-1931

GEOGRAPHIC DIVISION	1931*		1930*		1929
	Birthrate per 1,000 Population	Per Cent. Change from Preceding Year	Birthrate per 1,000 Population	Per Cent. Change from Preceding Year	Birthrate per 1,000 Population
U. S. BIRTH REG. AREA	17.8†	—5.8	18.9	0	18.9
New England					
Maine	20.2	— .5	20.3	+1.5	20.0
New Hampshire	16.6	—7.3	17.9	+1.7	17.6
Vermont	18.4	—4.7	19.3	+3.2	18.7
Massachusetts	16.1	—6.9	17.3	—1.1	17.5
Rhode Island	16.3	—7.9	17.7	—1.7	18.0
Connecticut	15.7	—8.7	17.2	+ .6	17.1
Middle Atlantic					
New York	16.1	—5.8	17.1	—2.3	17.5
New Jersey	15.6	—7.1	16.8	—2.3	17.2
Pennsylvania	18.4	—6.1	19.6	—1.0	19.8
East North Central					
Ohio	16.1	—9.0	17.7	0	17.7
Indiana	17.2	—6.0	18.3	0	18.3
Illinois	15.4	—7.8	16.7	—1.8	17.0
Michigan	18.4	—9.8	20.4	—1.9	20.8
Wisconsin	18.3	—5.2	19.3	+1.6	19.0
West North Central					
North Dakota	20.4	—6.0	21.7	+ .5	21.6
Minnesota	18.2	—1.6	18.5	+1.1	18.3
Iowa	16.8	—2.9	17.3	+1.2	17.1
Missouri	16.4	—4.1	17.1	+1.2	16.9
Nebraska	19.0	—3.1	19.6	+1.0	19.4
Kansas	17.3	—3.4	17.9	+2.9	17.4
South Atlantic					
Delaware	17.4	—7.0	18.7	+3.3	18.1
Maryland	17.5	—5.4	18.5	0	18.5
Dist. of Columbia	19.0	—1.0	19.2	+4.3	18.4

GEOGRAPHIC DIVISION	1931*		1930*		1929
	Birthrate per 1,000 Population	Per Cent. Change from Preceding Year	Birthrate per 1,000 Population	Per Cent. Change from Preceding Year	Birthrate per 1,000 Population
South Atlantic (*Cont'd*)					
West Virginia	22.5	—6.3	24.0	+ .8	23.8
Virginia	21.3	—5.8	22.6	+ .9	22.4
North Carolina	23.0	—4.6	24.1	—2.4	24.7
South Carolina	22.2	—4.7	23.3	+2.6	22.7
Georgia	21.2	+1.4	20.9	+4.0	20.1
Florida	17.9	—1.6	18.2	—3.2	18.8
East South Central					
Kentucky	21.3	—5.8	22.6	+4.1	21.7
Tennessee	19.7	—2.0	20.1	+3.1	19.5
Alabama	22.9	—4.6	24.0	0	24.0
Mississippi	22.3	—6.7	23.9	+4.4	22.9
West South Central					
Arkansas	19.5	—11.8	22.1	+9.4	20.2
Louisiana	20.2	— .5	20.3	0	20.3
Oklahoma	17.7	0	17.7	+5.4	16.8
Mountain					
Montana	17.7	—4.3	18.5	—1.1	18.7
Idaho	20.1	—2.4	20.6	+4.0	19.8
Colorado	17.5	—3.3	18.1	+4.0	17.4
Utah	‡	.....	25.4	+3.3	24.6
Wyoming	19.8	0	19.8	0	19.8
New Mexico	28.4	— .4	28.5	+5.2	27.1
Arizona	20.3	—14.3	23.7	+5.8	22.4
Nevada	13.2	— 9.6	14.6	+2.8	14.2
Pacific					
Washington	13.9	—5.4	14.7	+ .7	14.6
Oregon	13.6	—3.5	14.1	0	14.1
California	13.9	—5.4	14.7	— .7	14.8

*Rates for 1930 and 1931 are provisional.
†Does not include Utah.
‡Not available.

standstill, but will actually decline, now that accretion from outside by immigration is precluded.

COLLEGE HONOR MEN LONG-LIVED

The STATISTICAL BULLETIN has, in the past, presented a series of life tables, showing the expectation of life for various groups of our population. We have periodically reported in this way on the general population of the United States, as represented by the Registration States, which now include all but one state of the Union. Periodically, also, we have reported on the wage-earning population, as represented by the policyholders in the Industrial Department of the Metropolitan Life Insurance Company. Occasional life tables have also been exhibited for more narrowly circumscribed groups or professions, such as, for example, physicians.

We now present a table of expectation of life that formed one of the essential products of an investigation of the mortality of college graduates. This table enables us to compare, not only the college men, as a group, with the general population or other groups, but it goes beyond this in furnishing data for comparisons within the group of college men itself, as separate tables have been drawn up for graduates, athletes and men who graduated with honors.

Expectation of Life in Years

AGE	COLLEGE MEN			"American Men" (1900-1915)*	UNITED STATES 27 Registration States (1919-1920)†	NEW ZEALAND (1921-1922)‡
	Graduates	Athletes	Honor Men			
22	45.71	45.56	47.73	44.29	43.35	46.91
27	41.68	41.41	43.61	40.18	39.45	42.57
32	37.59	37.25	39.48	36.03	35.62	38.27
37	33.51	33.09	35.30	31.83	31.83	34.05
42	29.44	28.92	31.07	27.66	28.02	29.92
47	25.37	24.80	26.85	23.62	24.23	25.88
52	21.43	20.85	22.79	19.79	20.53	21.95
57	17.78	17.34	19.03	16.25	17.06	18.17
62	14.48	14.09	15.56	13.06	13.85	14.68
67	11.47	11.06	12.36	10.28	10.96	11.58
72	8.81	8.41	9.50	7.91	8.49	8.87
77	6.52	6.15	7.06	5.96	6.43	6.55
82	4.56	4.24	4.98	4.41	4.82	4.58
87	3.01	2.77	3.30	3.21	3.59	3.02
92	1.92	1.75	2.11	2.30	2.55	1.92

*Insured lives United States and Canada.
†White males.
‡Males.

*Rates for 1930 and 1931 are provisional.
†Does not include Utah.
‡Not available.

It is naturally to be expected that college graduates should make a better record of longevity than the general population, for they are in many respects a select group. They represent some of the best human material in the country with respect to physical fitness, social and economic standing and the relatively salubrious and sheltered occupations chosen by them after leaving college. But the numerical measure of the advantages which they thus enjoy is best seen in a table such as that which we now publish.

The material on which this study was based was the subsequent life history of 38,269 men graduated from eight Eastern colleges in the classes of 1870 to 1905. Of this number, 6,500 were "honor men." Two-thirds of the total graduates came from Harvard, Yale and Cornell. The remainder were from Amherst, Dartmouth, Wesleyan, and Williams. The data on athletes were drawn from the records of about 5,000 graduates of the eight Eastern colleges, together with some from Tulane University and Massachusetts Agricultural College. The most recent graduates included in the study had been at least twenty years under observation; members of the older classes for a much longer period. The period of observation extended to the middle of 1925 and, in this period, 9,640 deaths took place among the graduates.

A study of the table presented herewith reveals among others the following facts: At the age of twenty-two years, which is the base from which this table starts, the group of "athletes" had an expectation of life of 45.56 years, just a trifle less than the general group of "graduates," with an expectation of 45.71 years. A distinctly better record is made by the "honor men," who surpass the general average by just over two years, with a score of 47.73 for their expectation of life. This last figure surpasses the highest mark made in any national life table for males; the table for New Zealand, 1921–1922, which holds the record for longevity, shows an expectation of 46.91 for males at age twenty-two, almost a year less than the "honor men." These latter make, indeed, an excellent showing. Is this because mental and physical fitness tend to go together? Or is it because it is difficult for a man to excel in scholarship unless he is in good physical condition? Probably both these causes contribute in bringing about the observed effect. As regards the athletes, their record possibly may come as a surprise to some. So much has been said of the beneficial effects of physical exercise, that one would perhaps have expected these men to break records in longevity, as they do in their particular field. In point of fact, they did not even come up to the

general average for all graduates, including honor men, although there must necessarily be some degree of selection, students of relatively feeble constitution being from the very nature of things excluded from this group. In spite of this, the entire group of athletes fell below the average. A favorable indication appears when only those athletes who graduated in later years are considered separately. Their mortality is distinctly lower than that of all graduates and slightly lower even than that of honor men in the classes of 1900 to 1905. This improvement is, no doubt, due to the introduction of medical examination and control of the athletes, which has become standard practice in recent years.

DIABETES AND INSULIN

The continued rise in the mortality from diabetes is a matter of real concern. The cumulative deathrate from this disease, up to the end of July, among Metropolitan Industrial policyholders, is 7.3 per cent. higher than for the same period of last year, and far above that for any previous year for which the Company's Statistical Bureau has records. This increase, moreover, appears in the general population of the country. It is, in fact, a worldwide phenomenon.

This situation is especially difficult to understand at the present time. Diabetes is a disease frequently associated with excessive food consumption. We would hardly expect to see large increases in the deathrate during a period of depression, when the average income of the people is much reduced and over-indulgence presumably curtailed. There is abundant evidence that, in previous instances, unfavorable economic and social conditions brought about a considerable drop in the diabetes deathrate. In England and Wales, for example, the rate decreased from 13.2 per 100,000 in 1916 to 10.6 in 1918; in Paris, from 13.4 in 1916 to 9.6 in 1918; and in Berlin, from 18.5 to 12.0 in the same two years. In both England and Germany, the deathrate dropped still further in the two succeeding post-war years, characterized by continued hardship and especially limited food supplies. Even in the United States during this same period, the diabetes rate dropped, but not so sharply; for the World War did not result in nearly as much privation in this country as abroad.

What, then, is the explanation for this curious situation? To understand what has happened in recent years, it is necessary to keep in mind a number of things. The first is the increased interest which has centered on diabetes since the discovery of insulin in 1921. Physicians now more than ever are on the look-out for diabetes and

are equipped for its early discovery. More and more tests are being made in suspicious cases which result in the discovery of this disease. More laboratories are at work, and more annual physical examinations are now being made. The unprecedented rise in the number of applicants for life insurance is likewise bringing to the attention of people for the first time a diabetic condition which otherwise would have been overlooked. All of these items undoubtedly increase the known number of diabetics and result, in the last analysis, in increasing the number of registered cases of the disease when death finally occurs. Undoubtedly, in past years, deaths from diabetes were not fully recorded. We, therefore, stress better certification of diabetes as a cause of death as an explanation, in part, of the current increase in the mortality of the disease.

Another element in the situation is the increasing number of older persons in the community, of women, and especially of persons of certain foreign race stocks, all of whom have been shown to be of above average susceptibility to the disease. These changes in the composition of the population it is very difficult to evaluate; but, in their totality, the changes that have occurred in recent years and that are now occurring must have a very serious effect in increasing the number of cases and of deaths from diabetes. The progressive urbanization of our people is another item which works in the same direction. Recent years have seen our cities grow at the expense of the country as never before and even the countryside itself has been transformed into smaller urban centers. Life in the rural areas has taken on the appearance and content of life in the towns, and we know that this is more conducive to the development of diabetes.

A false impression has prevailed, moreover, with regard to the effect of the use of insulin on the deathrate from diabetes. It was assumed at first that the more extensive use of this drug would produce a continuous decline in the deathrate. But it has been long understood that insulin is not a permanent cure. As actually happened, the early fall in the deathrate after the discovery of insulin could only be expected to be a temporary one, to be followed by a rise in the direction of its previous level. For, the use of insulin has operated to increase the surviving diabetic population in marked degree; and the absolute number of deaths would, for a time, thus tend to increase, although the number relative to this diabetic population would be smaller than before. The trend of diabetes mortality may be expected to continue upward until the effect of the many forces described above is exhausted. After that, we may

look for a period of stabilization in the deathrate from the disease.

This view should not be considered a pessimistic one. Altogether the outlook is favorable. We know that the diabetic today lives longer than the one of pre-insulin years. Insulin has made it possible for him to continue his usual activities, a situation which is in sharp contrast with the severely restricted life of the diabetic in former days. Insulin has not only been a boon in the treatment of the disease, but it has also stimulated research in all phases of diabetes, which has resulted in improved knowledge of the disease and its management. It is true that early diagnosis has brought about an increase in the known incidence of diabetes, but the prognosis is now much better. If, despite these facts, one is fearful of the rising deathrate from diabetes, he may be reassured by the presence in this country today of many hundreds of happy, healthy, active diabetic children, leading normal lives, through the aid of insulin, whereas hardly more than a decade ago, the diabetic child was doomed to death after a few years of a miserable existence.

It is clear from this and earlier statements in the STATISTICAL BULLETIN that we are cognizant of the causes which have operated to increase in recent years the mortality from diabetes. While insulin has been of enormous benefit to diabetics, in its limited rôle as a specific means of treatment and not of cure, it could not be expected to control the rise in diabetes mortality which is due primarily to the increasing incidence of the disease. It is difficult to understand, therefore, how the data previously published in this BULLETIN could be used by certain individuals in attempting to prove that insulin has failed to help diabetics. We reaffirm our previous judgment that insulin has proved its worth, first by reducing coma as a cause of death in diabetes, and second, by taking the diabetic out of the class of the invalid and adding to his life many years of usefulness and productivity. This view is not in conflict with a rising mortality for a limited period of years.

HEALTH RECORD FOR JULY, 1932

July health conditions among Metropolitan Industrial policyholders, this year, were better than for any previous July. The deathrate for the month was 7.55 per 1,000. This is slightly lower than the previous minimum—7.56 recorded in July, 1922. These figures have never been closely approached in July of any other year. Furthermore, the improvement as compared with 1922, is

considerably greater than indicated by the above figures; for the 1932 figure is based, in part, upon the mortality of infants. No insurance on infant lives was written in 1922.

As each month passes, and shows, almost without exception, a mortality rate well below the average, the prospect becomes better that 1932 will register a new minimal deathrate for the industrial populations of the United States and Canada. Furthermore, as these insurance mortality statistics have always proved to be a sensitive index of current health conditions in the population at large, there is equally good prospect that 1932 will be a record health year for the general populations of both the United States and Canada. Obviously, a widespread outbreak of influenza or some other important communicable disease might counter-balance the gains thus far registered. To date, however, no indications of this kind are in prospect. The cumulative deathrate for the insured at the end of July was 4.3 per cent. below that for the like part of 1931, and the improvement has been observed in all sections of the United States, and throughout Canada.

The 1932 mortality record for some of the important diseases is so favorable as to be almost beyond belief. For example, the cumulative deathrate for pneumonia is only 77.7 per 100,000. In 1931, at this time, it was 95.0. The drop amounts to more than 18 per cent.—and 1931, at its close, registered the lowest pneumonia deathrate ever recorded. The cumulative mortality rate for tuberculosis (74.5 per 100,000) marks a drop of 7.8 per cent. from the previous low point, recorded only last year. It is possible, five months before the close of 1932, to state that the year will mark a new minimum in the mortality from tuberculosis. The rates for the principal epidemic diseases of childhood are all at low figures; and those for diarrheal complaints and puerperal conditions are well below the previous minimum. The rate for all accidents combined shows a drop of more than 11 per cent. in a single year, and that for automobile fatalities, a decline of 10 per cent.

The deathrate in the general population of the large cities of the United States, during July, was 10.2 per 1,000 estimated population, as compared with 10.4 in June, and 11.0 in July, 1931. Comparison with the facts for June shows increased prevalence of poliomyelitis and typhoid fever, but fewer cases of diphtheria, influenza, measles, scarlet fever and smallpox. As compared with July, a year ago, there was more sickness from measles, scarlet fever and typhoid fever, but less from diphtheria, influenza, poliomyelitis and smallpox.

The following table shows the mortality among Industrial policyholders for July, 1932; June, 1932, and July, 1931, together with the cumulative rates for the first seven months of each year.

METROPOLITAN LIFE INSURANCE COMPANY

Deathrates* per 100,000 for Principal Causes Premium-Paying Business in Industrial Department (Annual Basis)

MONTHS OF JULY, 1932; JUNE, 1932, AND JULY, 1931

CAUSES OF DEATH	ANNUAL RATE PER 100,000 LIVES EXPOSED*				
	July 1932	June 1932	July 1931	Cumulative January to July	
				1932	1931
TOTAL—ALL CAUSES	755.2	884.2	833.5	896.5	936.9
Typhoid fever	1.6	1.9	1.7	1.3	1.3
Measles	1.1	2.2	3.2	2.6	4.7
Scarlet fever	1.3	2.9	2.6	3.6	3.8
Whooping cough	2.7	3.2	2.7	3.6	3.5
Diphtheria	2.9	2.4	3.0	4.3	4.4
Influenza	6.3	9.8	4.9	23.2	29.9
Tuberculosis (All forms)	69.5	79.1	74.5	74.5	80.8
Tuberculosis of resp'y system	60.9	68.6	65.1	65.6	71.3
Cancer	81.7	96.3	83.0	89.9	83.2
Diabetes mellitus	17.5	23.4	16.7	23.4	21.8
Cerebral hemorrhage	55.9	65.6	59.7	65.4	64.7
Organic diseases of heart	141.2	160.2	135.0	163.1	159.0
Pneumonia (All forms)	33.1	55.0	37.0	77.7	95.0
Other respiratory diseases	6.9	9.7	9.2	10.2	11.9
Diarrhea and enteritis	11.7	9.6	16.5	8.8	11.1
Bright's disease (Chronic nephritis)	59.9	69.6	61.0	70.8	70.3
Puerperal state	10.2	9.9	10.2	10.9	11.7
Suicides	10.0	12.9	9.6	11.0	9.8
Homicides	4.3	6.6	7.1	6.0	6.7
Other external causes (excluding suicides and homicides)	61.6	63.0	89.9	53.3	60.1
Traumatism by automobiles	18.9	20.2	25.2	18.1	20.1
All other causes	175.8	200.9	206.0	193.2	202.9

*All figures in this table include insured infants under one year of age. The rates for 1932 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

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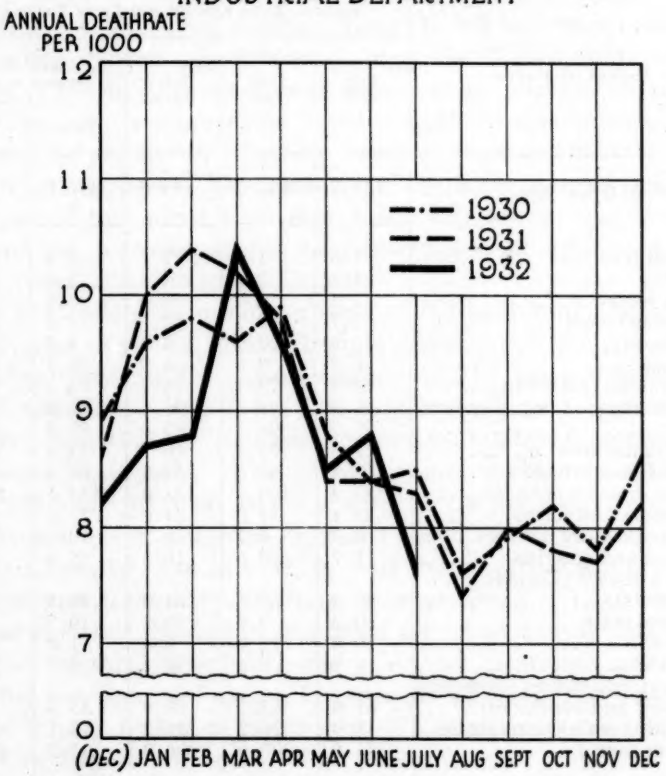

1930	9.6	9.8	9.6	9.9	8.8	8.4	8.5	7.6	7.9	8.2	7.8	8.6
1931	10.0	10.4	10.2	9.8	8.4	8.4	8.3	7.4	8.0	7.8	7.7	8.2
1932*	8.7	8.8	10.4	9.6	8.5	8.8	7.6					

* *Rates for 1932 are provisional*

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